

Piezo Actuators



Model names/numbers are represented as follows. The first character group identifies actuator frame type. The second character group identifies travel range in microns (micrometers). An E or C (if present) identifies an expanding or contracting actuator. An intermediate “-S” or “-P” identifies a single or a parallel arm frame. The third character group identifies piezo stack size. When fifth and sixth character groups are present, they identify max voltage and principal frame materials. Blocked force is calculated as Stiffness x Travel Range from 0 to 150V. Unloaded resonant frequency is for fixed-free mode.

Model Number	Nominal Travel, 0V to 150V (microns)	Nominal Travel, -30V to 150V (microns)	Unloaded Resonant Frequency (Hz)	Stiffness (N/micron)	Blocked Force (N)
FPA: Flextensional Piezo Actuators are efficient amplified piezo actuators with travel from 50 to 2000 microns.					
FPA-0200C-S-1018	160	210	890	1.9	304
FPA-0500C-P-1054	400	550	570	1.7	680
FPA-0085E-S-0518	68	85	1620	2.5	170
FPA-0100E-S-0518	84	105	1440	1.85	155
FPA-0150E-S-0518	132	165	1030	0.8	106
FPA-0200E-S-0518	168	210	750	0.65	109
FPA-0200E-S-0536	168	210	725	1	168
FPA-0200E-S-1018	164	205	810	2.15	353
FPA-0300E-S-0536	240	300	550	0.58	139
FPA-0400E-S-0536	352	440	440	0.35	123
FPA-0500E-S-0518	400	500	260	0.08	32
FPA-0500E-P-0536	420	525	445	0.24	101
FPA-0500E-P-1036	432	540	420	0.87	376
FPA-0550EHK-P-2054	448	560	365	2.6	1165
FPA-0750E-P-1054	600	750	320	0.68	408
FPA-1000E-P-1054	864	1080	250	0.4	346
FPA-1000E-P-1072	856	1070	260	0.48	411
FPA-1500E-P-1072	1280	1600	185	0.25	320
FPA-2000E-P-1072	1680	2100	142	0.15	252
NA: Non-Amplified Piezo Actuators are relatively high stiffness piezo actuators with travel up to 80 microns standard or 300 microns in custom configurations.					
NA-025-0518	20	25	8000	60	1200
NA-080-0554	64	80	4500	18	1152

Model Number	Nominal Travel, 0V to 150V (microns)	Nominal Travel, -30V to 150V (microns)	Unloaded Resonant Frequency (Hz)	Stiffness (N/micron)	Blocked Force (N)
LPA and LFPA: Lever-Amplified Piezo Actuators are simple kinematic lever piezo actuators with travel up to 10,000 microns and many custom variations.					
LPA-0100E-P-0518	80	100	3450	1.75	140
LFPA-6000	4800	6000	120	0.006	29
LFPA-10000	8000	10000	70	0.002	16
PSA: High-Frequency Piezo Actuators are a kinematic variation that brings higher frequency capabilities to actuated travel ranges up to 1500 microns.					
PSA-0350	350	400	2400	0.24	84
PSA-0500	500	625	1000	0.03	15
PSA-1250	1250	1500	500	0.045	56

Typical Application Notes:

- Maximum operating frequency is $\frac{1}{2}$ * Unloaded Resonant Frequency
- Use sinusoidal waveforms
- Operating temperature range: -25 to 85 °C
- Mean Time to Failure (MTTF) calculation is based on temperature, humidity and voltage. DSM can calculate the MTTF based on your application.
- Current demand for a sine wave input: Drive Current (Amps) = π * Drive Frequency (Hz) * Voltage peak-to-peak (VDC) * Piezo Actuator Capacitance (Farads) * (1.3)
- Torsional loading must be prevented—see FPA User Manual

